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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/855,179	05/14/2001	Evren Eryurek	P32.12-0006	8196

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EXAMINER
SUN, XIUQIN

ART UNIT	PAPER NUMBER
2863	

DATE MAILED: 01/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/855,179	Applicant(s) ERYUREK ET AL.	
	Examiner Xiuqin Sun	Art Unit 2863	

-- The MAILING DATE of this communication appears on the cov r sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 November 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *28-33* is/are allowed.

6)☒ Claim(s) *1-6,8,10,13-18 and 20-27* is/are rejected.

7)☒ Claim(s) *7,9,11-12 and 19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *11* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 4-5, 8, 16-18 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burns et al. (U.S. Pat. No. 5970430) in view of Latwesen et al. (U.S. Pat. No. 6466893 B1).

Burns et al. disclose a field device coupleable to a fieldbus process communication loop (see abstract; col. 17, lines 66-67 and col. 18, lines 1-19), the device comprising: a power module coupleable to the loop to power the device with energy received from the loop (col. 8, lines 15-20); a fieldbus loop communicator coupleable to the loop, and adapted to bi-directionally communicate over the loop (col. 7, lines 57-67); a controller coupled to the fieldbus loop communicator (col. 7, lines 57-67); diagnostic circuitry coupled to the controller and operably coupleable to the loop (col. 17, lines 50-65), the diagnostic circuitry adapted to measure a device-related parameter (col. 17, lines 50-65 and col. 26, lines 17-67); and wherein the controller provides diagnostic information based upon the device-related parameter (col. 20, lines 13-67); said

fieldbus process communication loop is selected from the group consisting of FOUNDATIONTM fieldbus (H1), ProfibusTM and WorldFIP et al. (col. 1, lines 59-67; col. 25, lines 42-49; and col. 29, lines 37-44); said diagnostic circuitry includes a temperature sensor adapted to provide a signal related to temperature of a fieldbus communication circuit in the field device (col. 10, lines 54-67); the diagnostic circuitry measures a plurality of device related parameters, and wherein the controller provides a diagnostic signal based upon a combination of the device-related parameters (col. 2, lines 47-58 and col. 27, lines 38-49); the diagnostic circuitry is adapted to measure a plurality of device-related parameters and provide failure prediction based upon the plurality of device-related parameters (col. 10, lines 36-53; col. 15, lines 58-67 and col. 16, lines 1-18); the diagnostic information is indicated from the loop communicator to a computerized maintenance management system for maintenance work orders (col. 13, lines 6-32). Burns et al. further teach: a method of providing diagnostics on a fieldbus process communication loop (col. 4, lines 61-67; col. 5, lines 1-14 and col. 6, lines 14-29), the method comprising: directly coupling diagnostic circuitry to the fieldbus process communication loop (col. 17, lines 50-65); measuring a parameter of the loop (col. 17, lines 50-65; col. 22, lines 20-41 and col. 26,lines 51-67); and analyzing the parameter to provide a diagnostic output (col. 27, lines 22-38).

Burns et al. do not mention explicitly a diagnostic circuitry adapted to measure a loop-related parameter and wherein the controller provides diagnostic information based upon the loop-related parameter.

Latwesen et al. disclose a method and system for determining estimates of loop-related parameters within a process control environment (see sbatract), and teach a diagnostic circuitry adapted to measure a loop-related parameter (for example, measurement of instantaneous current drawn from the loop by a current sensor), and wherein the controller provides diagnostic information based upon the loop-related parameter (Fig. 1; col. 3, lines 58-65; col. 4, lines 27-39; col. 6, lines 3-28 and col. 15, lines 16-35).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include the teaching of Latwesen measurement and analysis of loop-related parameters in the Burns system in order to determine the desired parameter estimate associated with a process control loop (Latwesen et al., abstract).

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burns et al. in view of Latwesen et al., as applied to claim 1 above, and further in view of Sprecher (U.S. Pat. No. 6425038) and Ruckley et al. (U.S. Pat. No. 6360277).

Burns et al. and Latwesen et al. teach a device that includes the subject matter discussed above. Burns et al. and Latwesen et al. do not mention explicitly: said group from which the fieldbus process communication loop is selected includes ControlNet, P-Net, SwiftNet, Interbus-S, and FOUNDATIONTM Fieldbus High-Speed Ethernet (H2).

Sprecher discloses a process control system and teaches the use of such communication protocols as ControlNet and FOUNDATIONTM Fieldbus High-Speed Ethernet (col. 4, lines 25-30).

Ruckley et al. discloses a process control system and teaches the use of such communication protocols as P-Net, SwiftNet and Interbus-S (col. 3, lines 1-14).

It would have been obvious to one having ordinary skill in the art at the time the invention was mad to include the teaching of Sprecher ControlNet and Ethernet communication protocols, and Ruckley P-Net, SwiftNet and Interbus-S communication protocols in the combination of Burns and Latwesen in order to form a group from which the fieldbus process communication loop can be selected (Ruckley et al., abstract).

4. Claims 3, 6, 10 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burns et al. in view of Latwesen et al., as applied to claim 1 above, and further in view of Anderson et al. (U.S. Pat. No. 5936514).

Burns et al. and Latwesen et al. teach a method and device that includes the subject matter discussed above. Burns et al. and Latwesen et al. do not mention explicitly: said diagnostic circuitry further comprises an intrinsic safety barrier; the loop-related parameter is instantaneous DC voltage; the loop related parameter is peak to peak communications signal strength on the process communication loop; the loop-related parameter is a characteristic impedance of the loop.

Anderson et al. disclose an input circuit in the field device which receives power from a communication loop, and teach an intrinsic safety barrier (col. 7, lines 20-29). Anderson et al. further teach that: the loop-related parameter is instantaneous DC voltage (col. 4, lines 14-25); the loop related parameter is peak to peak communications signal strength on the process communication loop (col. 3, lines 9-18); the loop-related parameter is a characteristic impedance of the loop (col. 6, lines 61-67 and col. 7, lines 1-11).

It would have been obvious to include the teaching of Anderson intrinsic safety barrier in the combination of Burns and Latwesen in order to separate a hazardous environment from safe environment (Anderson, col. 7, lines 20-29), and to include the teaching of Anderson loop-related parameters in the combination of Burns and Latwesen in order to monitor control loop that contains filed device powered by DC voltage supply (Anderson, col. 1, lines 57-67).

5. Claims 14-15, 21-24 and 26-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Burns et al. in view of Latwesen et al., as applied to claims 1 and 20 above, and further in view of Eryurek (U.S. Pat. No. 6047220).

Burns et al. and Latwesen et al. teach a method and device that includes the subject matter discussed above. Burns et al. and Latwesen et al. do not mention explicitly: said controller executes a neural network analysis of the loop-related parameter to provide the diagnostic signal; said controller executes fuzzy logic upon the loop-related parameter to provide the diagnostic signal; said method includes operably coupling the diagnostic circuitry to the loop via a loop

communicator to allow the diagnostic circuitry to access data communicated by the loop communicator.

Eryurek discloses a field device for process control (col. 1, lines 47-62) and teaches a controller that executes a neural network analysis of the loop-related parameter to provide the diagnostic signal, and that executes fuzzy logic upon the loop-related parameter to provide the diagnostic signal (col. 5, lines 12-22). Eryurek further teaches a loop communicator that is used to operably couple the data processing unit to the process control loop via a loop communicator to allow the data processing unit to access data communicated by the loop communicator (col. 2, lines 35-67).

It would have been obvious to include the teaching of Eryurek neural network analysis technique, fuzzy logic scheme and loop communicator in the combination of Burns and Latwesen in order to provide a field device with more reliable data communication mechanism and accurate data analysis algorithm (Eryurek, col. 1, lines 35-44).

6. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Burns et al. in view of Latwesen et al.;

Burns et al. and Latwesen et al. teach a method that includes the subject matter discussed above. Burns et al. and Latwesen et al. do not mention explicitly: analyzing the parameter to provide a diagnostic output further comprises applying a least squares method analysis to the measured parameter.

It is deemed that the least-squares method for data analysis is well known in the art. It would have been obvious to one having ordinary skill in the art at the

time the invention was made to apply such a method to analyzing parameters in the system of Burns et al. in order to provide a diagnostic output accurately and efficiently.

Allowable Subject Matter

7. Claims 7, 9, 11-12 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claims 28-33 are allowed.

Response to Arguments

9. Applicant's arguments with respect to claims 1-6, 8, 10, 13-18 and 20-27 have been considered but are moot in view of the new ground(s) of rejection.

Claims 1-6, 8, 10, 13-18 and 20-27 are rejected as new art (U.S. Pat. No. 6466893 B1) has been found to teach the step and means of measuring loop-related parameters and performing diagnostics on the process control loop rather than individual devices. For detailed response, please refer to section 2 set forth above in this office action.

Contact Information

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Xiuqin Sun whose telephone number is (703)305-3467. The examiner can normally be reached on 7:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Barlow can be reached on (703)308-3126. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9318 for regular communications and (703)872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

XS
XS
January 26, 2003

John Barlow
Supervisory Patent Examiner
Technology Center 2800